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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,797	11/13/2003	Amit Sinha	3226.1020-001	7849

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EXAMINER	
BOKHARI, SYED M	

ART UNIT	PAPER NUMBER
2609	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/712,797	SINHA, AMIT	
	Examiner	Art Unit	
	Syed Bokhari	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 November 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-17* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-17* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 5-9 and 13-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Ci et al. (USP 7,096,274 B1).

For claim 1, Ci et al. discloses a method of transmitting frames on a communications link comprising (see Abstract lines 1-3); monitoring the communications link to determine a probability of error on the link (see column 2 lines 8-11 in Summary of the Invention) and selecting frame size as a function of the determined probability (see column 3 lines 35-38 in Detailed Description).

For claim 5, Ci et al. discloses all limitations of claim 1 and also teaches wherein the step of monitoring monitors the signal to noise ratio on the communications link (see column 4 lines 22-25 in Detailed Description).

For claim 6, Ci et al. discloses all limitations of claim 1 and also teaches wherein the step of monitoring monitors a frame error rate on the communications link (see column 2 lines 15-18 in Summary of the Invention).

For claim 7, Ci et al. discloses all limitations of claim 1 and also teaches wherein frames are transmitted over the communications link using the IEEE 802.11 media access control and physical layer protocol (see column 3 lines 22-26 and lines 48-53 in Detailed Description).

For claim 8, Ci et al. discloses all limitations of claim 7 and also teaches wherein the frame is one of a plurality of fragments in a transmitted fragment burst (see column 3 lines 50-53 in Detailed Description).

For claim 9, Ci et al. discloses a system for transmitting frames on a communications link comprising (see column 3 lines 34-35 in Detailed Description); a monitoring routine which monitors the communications link to determine a probability of error in the link (see column 5 lines 4-9 in Detailed Description) and a frame sizer which selects frame size as a function of the determined probability (see column 3 lines 35-38).

For claim 13, Ci et al. discloses all limitations of claim 9 and also teaches wherein the monitoring routine monitors signal to noise ratio on the communications link (see column 4 lines 22-25 in Detailed Description).

For claim 14, Ci et al. discloses all limitations of claim 9 and also teaches wherein the monitoring routine monitors a frame error rate on the communications link (see column 2 lines 15-18 in Summary of the Invention).

For claim 15, Ci et al. discloses all limitations of claim 9 and also teaches wherein frames are transmitted over the communications link using the IEEE 802.11 media access control and physical layer protocol (see column 3 lines 22-26 and lines 48-53 in Detailed Description)

For claim 16, Ci et al. discloses all limitations of claim 15 and also teaches wherein the frame is one of a plurality of fragments in a transmitted fragment burst (see column 3 lines 50-53 in Detailed Description).

For claim 17, Ci et al. discloses A system for transmitting frames on a communications link comprising (see column 3 lines 34-35 in Detailed Description); means for monitoring the communications link to determine a probability of error on the link (see column 5 lines 4-9 in Detailed Description)

and means for selecting frame size as a function of the determined probability (see column 3 lines 35-38).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. Claims 2-4 and 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ci et al. (USP 7,096,274 B1) in view of Amalfitano (USP 6,236,647 B1).

For claims 2, Ci et al. discloses all limitations of claim 1 in paragraph 2. However he does not teach wherein the frame size is selected as a function of overhead as recited in claim 2. Amalfitano from the same or similar field of endeavor teaches wherein the frame size is selected as a function of overhead (see column 2 lines 55-57 in Summary of the Invention).

It would have been obvious to one of ordinary skill in the art at the time of invention was made to use the same method as taught by Amalfitano in the communication system of Ci et al. The function of optimization of frame size as a function of overhead as taught by Amalfitano can be modified/implemented in the communication system of Ci et al. by programming the wireless LAN Access Point (wireless hub) for continuous assessment of overhead size. The monitoring of overhead size is critical to the sender so as to adjust the size of the frames dynamically for maintaining the maximum throughput of the link. The motivation of adding the function of overhead size monitoring to the existing monitoring functions of error rate and channel noise is to increase the accuracy of assessment of channel quality and so the better frame sizing.

For claims 3, Ci et al. and Amalfitano disclose all limitations as recited in claim 2. But Amalfitano also teaches wherein, the selected frame size is selected from a set of frame sizes (see column 9 lines 10-65 and column 10 lines 1-22 in Detailed Description of Preferred Embodiment). The computed numerical as the solution to 1 + O /F opt + O = Alpha.F opt /1 – e(-F opt) where O is overhead, F.sub.opt is optimum frame size and alpha=-ln(1-probability of bit error) is officially noted and it is a well known in the art.

It would have been obvious to one of ordinary skill in the art at the time of invention was made to use the same method of computing the optimum frame size as taught by Amalfitano and the known art in the communication system of

Ci et al. The formula of computing the optimum frame size from the selected set of frame sizes as taught by Amalfitano can be modified/implemented in the communication system of Ci et al. by programming the wireless AP. The optimum frame size selection is formulated by measuring the frame error ratio (i.e. the ratio of received good frames to received bad or corrupt frames), frame overhead in bytes and number of good bit received in average before any bad bit. The motivation of implementing the numerical computing method is to enhance the accuracy in selecting the frame size for max throughput of the data.

For claim 4, Ci et al. and Amalfitano disclose all limitations as recited in claim 3. But Amalfitano also teaches wherein if overhead is significantly larger than the frame size, the selected frame size is inversely proportional to the natural logarithm of the determined probability (column 10 lines 29-59 in (Detailed Description of Preferred Embodiment).

It would have been obvious to one of ordinary skill in the art at the time of invention was made to use of the same algorithm to optimize the frame size as taught by Amalfitano in the communication system of Ci et al. The implementation of algorithm to optimize the frame size inversely proportional to error probability as taught by Amalfitano can be modified/implemented in the communication system of Ci et al. by programming the wireless AP to process the required functions. The motivation of implementing the algorithm method is to

optimize enhance the accuracy in selecting the frame size for max throughput of the data.

For claims 10, Ci et al. discloses all limitations of claim 9 in paragraph 2. However he does not teach wherein the frame size is selected as a function of overhead as recited in claim 2. Amalfitano from the same or similar field of endeavor teaches wherein the frame size is selected as a function of overhead (see column 2 lines 55-57 in Summary of the Invention).
It would have been obvious to one of ordinary skill in the art at the time of invention was made to use the same method as taught by Amalfitano in the communication system of Ci et al. The function of optimization of frame size as a function of overhead as taught by Amalfitano can be modified/implemented in the communication system of Ci et al. by programming the wireless LAN Access Point (wireless hub) for continuous assessment of overhead size. The monitoring of overhead size is critical to the sender for adjusting the size of the frames dynamically to maintain the maximum throughput of the link. The motivation of adding the function of overhead size monitoring to the existing monitoring functions of error rate and channel noise will increase the accuracy of assessment of channel quality and so the better frame sizing.

For claim 11, Ci et al. and Amalfitano disclose all limitations as recited in claim 9 fails to disclose wherein, the selected frame size is selected from a set of frame

sizes. Amalfitano from the same or similar field of endeavor teaches wherein, the selected frame size is selected from a set of frame sizes (see column 9 lines 10-65 and column 10 lines 1-22 in Detailed Description of Preferred Embodiment). The computed numerical as the solution to 1 + O /F opt + O = F opt /1 - F opt where O is overhead, F.sub.opt is optimum frame size and alpha=-ln(1-probability of bit error) is officially noted and it is a well known in the art.
It would have been obvious to one of ordinary skill in the art at the time of invention was made to use the same method of computing the optimum frame size as taught by Amalfitano and the known art in the communication system of Ci et al. The formula of computing the optimum frame size from the selected set of frame sizes as taught by Amalfitano can be modified/implemented in the communication system of Ci et al. by programming the wireless AP. The optimum frame size selection is formulated by measuring the frame error ratio (i.e. the ratio of received good frames to received bad or corrupt frames), frame overhead in bytes and number of good bit received in average before any bad bit. The motivation of implementing the numerical computing method is to enhance the accuracy in selecting the frame size for max throughput of the data.

For claim 12, Ci et al. and Amalfitano disclose all limitations as recited in claim 11 but fails to disclose wherein if overhead is significantly larger than the frame size, the selected frame size is inversely proportional to the natural logarithm of the determined probability. Amalfitano from the same or similar field of endeavor

teaches wherein if overhead is significantly larger than the frame size, the selected frame size is inversely proportional to the natural logarithm of the determined probability (column 10 lines 29-59 in (Detailed Description of Preferred Embodiment).

It would have been obvious to one of ordinary skill in the art at the time of invention was made to use of the same algorithm to optimize the frame size as taught by Amalfitano in the communication system of Ci et al. The implementation of algorithm will optimize the frame size that will be inversely proportional to error probability as taught by Amalfitano can be modified/implemented in the communication system of Ci et al. by programming the wireless AP to process the required functions. The motivation of implementing the algorithm method is to enhance the accuracy in selecting the frame size for max throughput of the data.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. USP 5,307,351 (Webster), USP 6,469,991 B1 (Chuha), USP 7,016,948 B1 (Yildiz), US 2004/0029612 A1 (Gorsuch), US 2004/0141522 A1 (Texerman et al.).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Syed Bokhari whose telephone number is (571) 270-

3115. The examiner can normally be reached on Monday though Friday from 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dang Ton can be reached on (571) 272-3171. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Ton

DANG T. TON
SUPERVISORY PATENT EXAMINER